

# PATENT ABSTRACTS OF JAPAN

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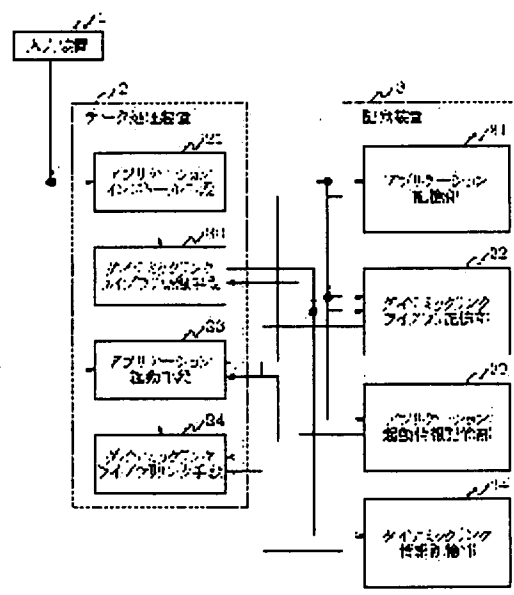
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## (54) SYSTEM AND METHOD FOR CONTROLLING DYNAMIC LINK LIBRARY, AND RECORDING MEDIUM

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To simultaneously execute dynamic link libraries identical in name but different in versions by being dynamically linked with different applications.

**SOLUTION:** An application install means 21 stores an application in an application storing part 31, and registers application start information in an application start information storing part 33, and temporarily stores a dynamic library in a dynamic link library storing part 32. A dynamic link library registering means 22 actually stores the temporarily stored dynamic link library, and registers the correspondence information of the application and the dynamic link library in a dynamic link information storing part 34. When an application starting means 23 is started, and dynamic link is requested by the application which is being executed, a dynamic link library link means 24 links the dynamic link library by referring to the correspondence information.



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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] Especially this invention relates to the dynamic link library control system, approach, and record medium which carry out the dynamic link of the dynamic link library corresponding to the application started [ from ] while the dynamic link library of a different version was intermingled about the control system of a dynamic link library.

[0002]

[Description of the Prior Art] The language currently used for development of application is a gestalt usual in a runtime library being offered as a dynamic link library.

[0003] Then, dynamic link libraries, such as a runtime library, are also enclosed in an application package, and the application install means for installing application and a dynamic link library is offered.

[0004] However, version up is given frequently [ the runtime library of language ] because of failure correction or a functional addition.

[0005] Therefore, the dynamic link library where a version changes with differences of the development stage of application will be enclosed, and the user who installs two or more applications needed to choose one version from two or more dynamic link libraries.

[0006] The conventional technique is further explained using drawing 8 .

[0007] Drawing 8 is the block diagram showing the configuration of the conventional example.

[0008] When drawing 8 is referred to, the conventional example consists of an input device 1, a data processor 4, and a store 5, and, in a data processor 4, a store 5 contains the application storage section 51, the dynamic link library storage section 52, and the application starting information storage section 53 including the application install means 41, the application starting means 42, and the dynamic link library link means 43.

[0009] The application install means 41 notifies a user of that, when the version of the dynamic link library installed in the dynamic link library storage section 52 is compared with the version of the dynamic link library which it is going to install from now on and it is going to install a different version, and it makes a user choose that it is continued whether using the already installed dynamic link library or whether the dynamic link library of a different version is newly installed.

[0010] Selection of the direction which newly installs the dynamic link library of a different version stores the dynamic link library of a version which is different in the dynamic link library storage section 52.

[0011] If the application started with the application starting means 42 uses a dynamic link, the dynamic link library link means 43 links the dynamic link library of the meaning stored in the dynamic link library storage section 52.

[0012] For example, there are two applications which carry out the dynamic link of the dynamic link library, and perform it, Application A shall operate correctly in combination with the dynamic link library of an old version, and Application B shall operate correctly in combination with the dynamic link library of a high version.

[0013] When the dynamic link library of an old version is stored in the dynamic link library storage section 52 and Application A is started with the application starting means 42, the dynamic link library link means 43 carries out the dynamic link of the dynamic link library of an old version, and Application A operates correctly.

[0014] Then, since the dynamic link library of an old version is stored in the dynamic link library storage section 52 when Application B is started, the dynamic link of the dynamic link library of an old version is carried out, and

Application B does not operate correctly.

[0015] Therefore, before starting Application B, the dynamic link library of a high version is restored in the dynamic link library storage section 52 with the application install means 41.

[0016] And if Application B is started, the dynamic link of the dynamic link library of a high version will be carried out, and Application B will operate correctly.

[0017] After that, in starting Application A again, it restores the dynamic link library of an old version in the dynamic link library storage section 52.

[0018] Thus, the dynamic link library of the version which application uses is restored in the dynamic link library storage section 52 each time.

[0019] Or in order to avoid version contention of a dynamic link library, there is also the approach of dividing the storing location of a dynamic link library (not shown about this configuration).

[0020] By this approach, the dynamic link library relevant to application is stored in the same storing location as application.

[0021]

[Problem(s) to be Solved by the Invention] However, there were the following troubles in the Prior art mentioned above.

[0022] That is, since only the dynamic link library of one version is alternatively storable in the dynamic link library storage section, the dynamic link library of the version which application uses each time must be restored in the dynamic link library storage section, and employment is complicated and easy to cause an operation mistake. When application is performed without restoring surely, application will malfunction and a failure will be caused.

[0023] Moreover, even when it divides and stores the storing location of a dynamic link library and only the one same dynamic link library should just exist, it will exist by the number of the application which uses it, and the storing tooth space of a dynamic link library will increase.

[0024] The object of this invention is to offer the dynamic link library control system, approach, and record medium which carry out the dynamic link of the right dynamic link library to application, also when two or more applications need to carry out the dynamic link of the dynamic link library of a version different, respectively.

[0025]

[Means for Solving the Problem] The dynamic link library control system of invention of this application 1st It is the dynamic link library control system which controls the dynamic link library of which a dynamic link is required from application. A dynamic link library storage means to store two or more dynamic link libraries of a homonym where versions differ, It is characterized by having the dynamic link means which chooses the dynamic link library of the version corresponding to the started application from said dynamic link library storage means, and carries out a dynamic link.

[0026] The dynamic link library control system of invention of this application 2nd The application storage section which is the dynamic link library control system which controls the dynamic link library of which a dynamic link is required from application, and stores application, The dynamic link library storage section which stores a dynamic link library, The application starting information storage section which registers application starting information, The dynamic link information storage section which registers the response information on application and a dynamic link library, An input means to \*\*\*\* and to give directions to an application install means and an application starting means, Store in said application storage section the application specified by said input means, and a storing location is made into application starting information. The application install means which registers with said application starting information storage section, and carries out temporary storing of the dynamic link library at said dynamic link library storage section, Actual storing of said dynamic link library by which temporary storing was carried out is carried out at said dynamic link library storage section. With said application install means A dynamic link library registration means to register the response information on the stored application and said dynamic link library by which actual storing was carried out into said dynamic link information storage section, The application starting means which loads the application specified by said input means from said application storage section based on the application starting information on said application starting information storage section, and carries out starting activation, When the application started by said application starting means requires a dynamic link It is characterized by being alike and having a calling agency application name and a dynamic link dynamic link library [ dynamic link library ] link means based on the response information on said dynamic link information storage section.

[0027] The dynamic link library control system of invention of this application 3rd is characterized by carrying out division management of the temporary storing field where temporary storing of said dynamic link library is carried out, and said dynamic link library two of these storing fields by which actual storing is carried out by said dynamic link library storage section in the 2nd invention.

[0028] The dynamic link library control system of invention of this application 4th is characterized by said this storing field constituting the structure where the dynamic link library of a homonym can be stored in the 3rd invention.

[0029] The dynamic link library control system of invention of this application 5th is characterized by carrying out actual storing of said dynamic link library by which temporary storing was carried out, when said dynamic link library registration means compares said dynamic link library by which temporary storing was carried out with the dynamic link library by which actual storing has already been carried out and the thing of said dynamic link library by which temporary storing was carried out and homonym, and the same content does not exist in the 2nd invention.

[0030] The dynamic link library control system of invention of this application 6th is characterized by said response information consisting of said application name, said dynamic link library name by which actual storing was carried out, and said dynamic link library storing location by which actual storing was carried out in the 2nd invention.

[0031] The dynamic link library control approach of invention of this application 7th It is the dynamic link library control approach which controls the dynamic link library of which a dynamic link is required from application. Store application in the application storage section and it registers with the application starting information storage section by making an application name and an application storing location into application starting information. Temporary storing of the dynamic link library is carried out at the dynamic link library storage section. When said dynamic link library by which temporary storing was carried out is compared with the dynamic link library by which actual storing is carried out at the dynamic link library storage section and the thing of said dynamic link library by which temporary storing was carried out and homonym, and the same content does not exist, already Actual storing of said dynamic link library by which temporary storing was carried out is carried out at the dynamic link library storage section. It registers with the dynamic link information storage section by making into response information the dynamic link library storing location by which actual storing was carried out with said application name and said dynamic link library name by which actual storing was carried out. With reference to said application starting information, load the application by which starting assignment was carried out from the application storage section, and starting activation is carried out. When the application under said activation requires a dynamic link, it is characterized by what is done for the dynamic link of the dynamic link library registered into said response information with reference to said response information by using said application name as a key.

[0032] The application storing processing which the record medium of invention of this application 8th stores application in the application storage section, makes an application name and an application storing location application starting information, and is registered into the application starting information storage section, The dynamic link library temporary storing processing which carries out temporary storing of the dynamic link library at the dynamic link library storage section, When said dynamic link library by which temporary storing was carried out is compared with the dynamic link library by which actual storing is carried out at the dynamic link library storage section and the thing of said dynamic link library by which temporary storing was carried out and homonym, and the same content does not exist, already The dynamic link library book storing processing which carries out actual storing of said dynamic link library by which temporary storing was carried out at the dynamic link library storage section, The response information registration processing registered into the dynamic link information storage section by making into response information the dynamic link library storing location by which actual storing was carried out with said application name and said dynamic link library name by which actual storing was carried out, The application starting processing which loads the application by which starting assignment was carried out from the application storage section with reference to said application starting information, and carries out starting activation, Response information-reference processing in which said response information is referred to by using said application name as a key when the application under said activation requires a dynamic link, It is characterized by recording the program for making a computer perform dynamic link processing which carries out the dynamic link of the dynamic link library registered into said response information.

[0033]

[Embodiment of the Invention] The description of this invention is to keep the dynamic link library where a dynamic link library name is the same and where the contents differ but, i.e., the dynamic link library where versions differ, in

the same dynamic link library storage section, and choose and carry out the dynamic link of the dynamic link library of the version corresponding to the started application.

[0034] The gestalt of operation of this invention is explained to a detail with reference to a drawing.

[0035] Drawing 1 is the block diagram showing the configuration of the gestalt of operation of this invention.

[0036] Drawing 2 is drawing explaining the dynamic link library storage section.

[0037] Drawing 3 is drawing showing the structure of application starting information.

[0038] Drawing 4 is drawing showing the structure of response information.

[0039] if drawing 1 is referred to -- the dynamic link library control system of this invention -- an input device 1, a data processor 2, and storage 3 -- since -- it is constituted.

[0040] An input device 1 is equipment which gives directions to a data processor 2, and is a keyboard etc.

[0041] A data processor 2 is equipped with the application install means 21, the dynamic link library registration means 22, the application starting means 23, and the dynamic link library link means 24.

[0042] The application install means 21 stores in the application storage section 31 the application program (it is only henceforth called application) specified with the input unit 1 from install equipment (not shown), and registers it into the application starting information storage section 33 by making the storing location into application starting information. Moreover, the application install means 21 stores a dynamic link library in the dynamic link library storage section 32 from install equipment (not shown) (temporary storing).

[0043] The dynamic link library registration means 22 is called after the time of application install means 21 termination. In order that the dynamic link library registration means 22 may make the dynamic link library where the contents differ by the same dynamic link library name live together within the dynamic link library storage section 32, within the dynamic link library storage section 32, it divides a storing location, and stores and manages it.

[0044] The dynamic link library registration means 22 changes the storing location of the dynamic link library by which temporary storing was carried out with the application install means 21 at the dynamic link library storage section 32, and carries out actual storing. Furthermore, the response information on the dynamic link library information on the dynamic link library which carried out actual storing with the application name stored by the application install means 21 (a dynamic link library name and dynamic link library storing location) is registered into the dynamic link information storage section 34.

[0045] The application install means 21 loads the application specified by the input means 1 from the application storage section 31 based on the application starting information registered into the application starting information storage section 33, and starting activation of the application starting means 23 is carried out.

[0046] Control is passed to the dynamic link library link means 24 when the application started by the application starting means 23 requires a dynamic link.

[0047] A calling agency application name and the dynamic link library registration means 22 load a suitable dynamic link library from the dynamic link library storage section 32 based on the response information registered into the dynamic link information storage section 34, and carry out the dynamic link of the dynamic link library link means 24 to application.

[0048] Storage 3 is equipment which memorizes information and is equipped with the application storage section 31, the dynamic link library storage section 32, the application starting information storage section 33, and the dynamic link information storage section 34.

[0049] The application storage section 31 is a field which stores application. Application is stored by the application install means 21.

[0050] The dynamic link library storage section 32 is a field which stores a dynamic link library. Storing management is carried out by the dynamic link library registration means 22 so that the dynamic link library of a homonym can live together.

[0051] The structure of the dynamic link library storage section 32 is shown in drawing 2 (a). Reference of drawing 2 (a) divides the dynamic link library storage section 32 into a temporary storing field and this storing field. When a dynamic link library is stored, the dynamic link library registration means 22 checks whether it stores in a temporary storing field first, and the thing of a homonym and the same content is already in this storing field, or there is nothing, and if there is nothing of a homonym and the same content into this storing field, it will move the dynamic link library of a temporary storing field to this storing field. The example of storing of the dynamic link library storage section 32 is shown in drawing 2 (b). Reference of drawing 2 (b) stores "AAA", "BBB", and three dynamic link libraries of

"CCC" in this storing field of the dynamic link library storage section 32 for the dynamic link library name.

[0052] The application starting information storage section 33 is a field which registers the application starting information on in what field in the application storage section 31 each application is installed. Application starting information consists of an application name and the application storing location in the application storage section 31, and is registered by the application install means 21. The structure of application starting information is shown in drawing 3.

[0053] The dynamic link information storage section 34 is a field which registers the response information on application and a dynamic link library. Response information consists of an application name, a dynamic link library name, and the dynamic link library storing location in the dynamic link library storage section 32, and is registered by the dynamic link library registration means 22. The structure of response information is shown in drawing 4.

[0054] Actuation of the gestalt of operation of this invention is explained to a detail with reference to drawing 1, drawing 5, and drawing 6.

[0055] Drawing 5 is drawing showing the flow of application and dynamic link library storing actuation.

[0056] Drawing 6 is drawing showing the flow of dynamic link actuation.

[0057] First, the actuation which stores application and a dynamic link library is explained.

[0058] If drawing 5 is referred to, the application install means 21 will be started by the input unit 1, will store application in the application storage section 31, and will register the storing location into the application starting information storage section 33. Moreover, if there is a dynamic link library, temporary storing of the dynamic link library will be carried out at the dynamic link library storage section 32 (step A1).

[0059] The dynamic link library registration means 22 is called after the time of application install means 21 termination, and it is checked whether temporary storing of the dynamic link library has been carried out by the application install means 21 (step A2).

[0060] Detection of that temporary storing of the dynamic link library was carried out checks whether the dynamic link library of the same dynamic link library name is already registered (step A3).

[0061] When the dynamic link library of the same dynamic link library name is already registered, it checks whether the content is in agreement (step A4).

[0062] When a dynamic link library name and the content are thoroughly in agreement, response information is constituted from storing information on the already registered dynamic link library, and it registers with the dynamic link information storage section 34 (step A5).

[0063] When a dynamic link library name is new, or when [ with the same dynamic link library name ] the contents differ but, at step A1, the dynamic link library which carried out temporary storing is moved to a new location, actual storing is carried out, response information is constituted from new information, and it registers with the dynamic link information storage section 34 (step A6).

[0064] Then, actuation of a dynamic link is explained.

[0065] If drawing 6 is referred to, the application starting means 23 will load the application specified with the input unit 1 from the application storage section 31, and will carry out starting activation. The started application shall require a dynamic link and shall operate (step B1).

[0066] The application under activation requires a dynamic link and the dynamic link library link means 24 is started (step B-2).

[0067] The dynamic link library link means 24 carries out the dynamic link of the dynamic link library installed in coincidence to application based on the response information registered into the dynamic link information storage section 34, even if the dynamic link library of a homonym is stored in the dynamic link library storage section 32 (step B3).

[0068] Activation of application is continued after carrying out the dynamic link of the dynamic link library (step B4).

[0069] Actuation is further explained to a detail using drawing 7.

[0070] Drawing 7 is drawing explaining actuation.

[0071] Each part of storage 3 shall show drawing 7 (a) - (d) as a premise explaining actuation.

[0072] First, a premise is explained.

[0073] if drawing 7 is referred to -- (a) -- the application storage section 31 -- application -- "APR" -- a storing location -- it stores from "r" -- having -- application -- "APS" -- a storing location -- being stored from "s" is shown.

[0074] (b) shows that dynamic link library "DLLA" is stored in the dynamic link library storage section 32 from storing

location "a", and dynamic link library "DLLB" is stored from storing location "b."

[0075] (c) shows the application starting information registered into the application starting information storage section 33.

[0076] (d) shows the response information registered into the dynamic link information storage section 34.

[0077] Next, install of new application is explained.

[0078] New application "APT" is stored in the application storage section 31 with the application install means 21.

Drawing 7 (e) shows that application "APT" was stored from storing location "t" of the application storage section 31.

Moreover, drawing 7 (g) shows that the application starting information on application "APT" was added to the application starting information storage section 33.

[0079] Dynamic link library "DLLA" shall be enclosed by application "APT." Then, the application install means 21 stores dynamic link library "DLLA" in the temporary storing field of the dynamic link library storage section 32.

[0080] It checks whether the dynamic link library registration means 22 has the content of dynamic link library "DLLA" stored in the temporary storing field equal to the content of the dynamic link library (dynamic link library "DLLA" stored from storing location "a") of the homonym already stored in this storing field. In this case, dynamic link library "DLLA" and the content which are stored in storing location "a" shall differ from each other.

[0081] The dynamic link library registration means 22 moves dynamic link library "DLLA" stored in the temporary storing field to this storing field. Drawing 7 (f) shows that dynamic link library "DLLA" was stored from storing location "c" of the dynamic link library storage section 32. Moreover, drawing 7 (h) shows that the response information on application "APT" and dynamic link library "DLLA" was added to the dynamic link information storage section 34.

[0082] Then, starting activation of the newly installed application is explained.

[0083] application -- starting -- a means -- 23 -- application -- " -- APT -- " -- application -- starting -- information -- referring to -- application -- storage -- the section -- 31 -- storing -- a location -- " -- t -- " -- from -- application -- " -- APT -- " -- loading -- starting activation -- carrying out .

[0084] If application "APT" requires a dynamic link during "Application APT" activation, the dynamic link library link means 24 will be started.

[0085] The dynamic link library link means 24 loads and carries out the dynamic link of dynamic link library "DLLA" stored from storing location "c" of the dynamic link library storage section 32 by using as a key the application name which required the dynamic link with reference to the response information on the dynamic link information storage section 34.

[0086] Activation of application "APT" is continued after carrying out a dynamic link.

[0087] Thus, by linking a dynamic link library suitable based on the response information for which the dynamic link library link means 24 is registered into the dynamic link information storage section 34, when the application started by the application starting means 23 requires a dynamic link, even if a dynamic link library name is the same, the dynamic link library where the contents differ can be made to be able to link to separate application, and can be performed simultaneously.

[0088] The effectiveness of preventing in advance the trouble generated by the non-transposition by the different version between application and a dynamic link library by this is produced.

[0089] Moreover, in order to distinguish a version with the storing location of a dynamic link library, there is an advantage which does not need to add modification of what, either in application and a dynamic link library.

[0090] In the gestalt of the operation by this invention mentioned above, it uses in order to record the program for performing processing actuation of a dynamic link library control system etc. on record media (not shown), such as a magnetic disk and an optical disk, as data, to read the recorded data and to operate a dynamic link library control system. Thus, the data which operate the dynamic link library control system by this invention are made to record on a record medium, and the function of a dynamic link library control system can be realized now by installing this record medium.

[0091]

[Effect of the Invention] Even when the 1st effectiveness of this invention has the same dynamic link library name, it is being able to carry out the dynamic link of the dynamic link library where the contents' differ to separate application, and being able to perform it simultaneously.

[0092] The reason is that a means to store the dynamic link library of a different version was established, and it

established the means matched with application at the time of a dynamic link.

[0093] The 2nd effectiveness of this invention is not requiring modification by the side of application (the body of application, and dynamic link library). Consequently, this invention is applicable also to shipped application.

[0094] The reason is that a means to store the dynamic link library of a different version was established, and it established the means matched with application at the time of a dynamic link so that modification by the side of application might not be required.

[0095] The 3rd effectiveness of this invention is that the storing tooth space of a dynamic link library ends by necessary minimum.

[0096] The reason is that it established the means which stores the dynamic link library of a different version in the same dynamic link library storage section, and can use it in common from application.

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[0012] For example, there are two applications which carry out the dynamic link of the dynamic link library, and perform it, Application A shall operate correctly in combination with the dynamic link library of an old version, and Application B shall operate correctly in combination with the dynamic link library of a high version.

[0013] When the dynamic link library of an old version is stored in the dynamic link library storage section 52 and Application A is started with the application starting means 42, the dynamic link library link means 43 carries out the dynamic link of the dynamic link library of an old version, and Application A operates correctly.

[0014] Then, since the dynamic link library of an old version is stored in the dynamic link library storage section 52 when Application B is started, the dynamic link of the dynamic link library of an old version is carried out, and Application B does not operate correctly.

[0015] Therefore, before starting Application B, the dynamic link library of a high version is restored in the dynamic link library storage section 52 with the application install means 41.

[0016] And if Application B is started, the dynamic link of the dynamic link library of a high version will be carried out, and Application B will operate correctly.

[0017] After that, in starting Application A again, it restores the dynamic link library of an old version in the dynamic link library storage section 52.

[0018] Thus, the dynamic link library of the version which application uses is restored in the dynamic link library storage section 52 each time.

[0019] Or in order to avoid version contention of a dynamic link library, there is also the approach of dividing the storing location of a dynamic link library (not shown about this configuration).

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